

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Martin Starzmann
Serial No. : 09/463,598
Filed : January 27, 2000

REMARKS

In the Office Action mailed July 6, 2001, the Examiner has objected to claims 2-12 because of the informalities of reference to a "cooling fluid"; the Examiner states that a "frost resistant fluid" or simply a "fluid" would be more accurate. Accordingly, applicant amends claims 2-12 to change "cooling fluid" to "fluid".

The Examiner has rejected claims 1-12 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner requests that all slashes (/) be removed from the claims, that the phrase "calculated on the total weight" be replaced with "based on the total weight" in all appropriate claims, that the phrase "an acid selected from the group consisting of acid" in claim 2 be corrected as it is redundant, that the phrase "weight" identify to what it refers, such as "of the mixture" or "of the corrosion inhibitor", and that claim 7 be corrected as it appears to include an extra "and" as well as an unnecessary semi-colon. In this Response, applicant amends claims 1-12 to correct these concerns. Specifically, the slashes in claim 1 have been replaced with "or", "calculated on the total weight" has been amended to "based on the total weight" in claims 2-6 and 11, claim 2 has been amended to recite "an acid selected from the group consisting of acetic acid", the phrase "weight" has been amended to "weight of the corrosion inhibitor" in claims 4 and 5, the phrase "weight" has been amended to "weight of" in claims 2 and 6, and claim 7 has been amended to remove the extra "and" and the unnecessary semi-colon. The group of acids in claim 2 can be found in the specification on page 2, line 14. The type of weight in claim 2 can be found on page 2, line 14, in claims 4 and 5, the type of weight can be found on page 3, lines 25-26 and the type of weight in claim 6 can be found on page 3, line 28. The support for the amendment to claim 7 can

be found in the specification on page 4, lines 2-5. Thus, no new matter was added.

The Examiner has rejected claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over Hoenke et al., United States Patent No. 5,132,035. Applicant respectfully traverses this rejection. Hoenke et al. discloses a deicing composition in particulate form comprising an alkaline earth and/or alkali metal carboxylate, especially calcium magnesium acetate, and an anti-staining amount of an organic chelating agent. Preferred chelating agents are, column 4, lines 16-25, aminocarboxylic acids containing 2 to 4 carboxylic acid groups, such as EDTA (ethylene diamine tetraacetic acid).

The corrosion inhibitor used is different to the one used in applicant's invention. The combination of C5-C16 monocarboxylic acid or its salts and C5-C16 dicarboxylic acid or its salts used by applicant is not disclosed in Hoenke et al. Nor is use of a triazole mentioned. Since Hoenke et al. is not concerned with a frost resistant fluid used as heating or cooling fluid, but instead discloses a deicing particulate composition, the problem of providing a good heat transfer between a fluid and a metal surface is not at all indicated in Hoenke et al.

Applicant's invention discloses a frost resistant heating or cooling fluid containing alkali salts of acetic acid and/or formic acid. Such fluid is a strong ionic solution and thus it is important to have an effective corrosion protection. Many corrosion inhibitors are, however, film-forming chemicals, which is undesirable in a heating or cooling fluid since these films cause an impaired heat transfer between the cooling fluid and, for example, a metal surface.

According to the invention, a corrosion inhibitor in the form of a mixture of a C5-C16 monocarboxylic acid or alkali-, ammonium- or amino salts of said acid, a C5-C16 dicarboxylic acid or alkali-, ammonium- or amino salts of said acid, and a triazole has been found that provides an excellent corrosion protection and, moreover, provides an excellent heat transfer between a metal surface and the fluid. This is shown in the Example by the test results presented in the table. The combination of a mono- and di-carboxylic acids or their salts is believed to provide a synergistic effect with respect to the corrosion protection of metallic surfaces. The triazole is specifically used as a copper protection.

In summary, at least two steps are required in order to arrive at applicant's invention starting

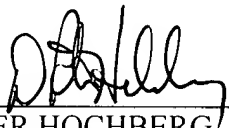
from Hoenke et al. First, one would have to go from a particulate deicing composition to a fluid used for heating and cooling purposes. Second, one would have to choose a different corrosion inhibitor adapted to use in heating and cooling devices and which secures a good heat transfer between the fluid and a metal surface. Applicant believes that the present invention as disclosed and claimed cannot be regarded to be obvious over Hoenke. Applicant respectfully requests that this rejection of claims 1-12 as being unpatentable over Hoenke et al. be withdrawn.

In the specification, applicant has amended the table at the bottom of page 5 to make the headings more accurate. Thus, applicant has replaced "Reference" with "TEST" in the center and right columns of this table since the data in these columns is the results achieved with the test liquid according to the invention. No new matter has been added. Applicant respectfully requests that the Examiner allow the application. If the Examiner has any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,

Date: _____

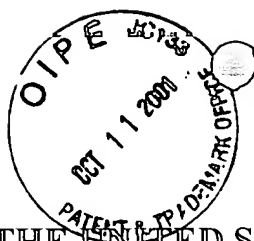
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Attached: Marked Up Specification and Claims



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Martin Starzmann

Serial No. : 09/463,598

Filed : January 27, 2000

Title : FROST RESISTANT HEATING/COOLING FLUID

Art Unit : 1751

Examiner : Derrick G. Hamlin

Attorney Docket: GP7287US (#90225)

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ATTACHMENT TO AMENDMENT

TC 1750

MARKED UP SPECIFICATION SHOWING CHANGES RELATIVE TO THE ORIGINAL VERSION

Please replace the headings in the table on page 5, beginning at line 20, with the following table headings:

Test duration (h)	[Reference] <u>TEST</u> Coupon temperature (°C)	[Reference] <u>TEST</u> Coupon temperature (°C)
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MARKED UP CLAIMS SHOWING CHANGES RELATIVE TO THE ORIGINAL VERSION

1. (Twice Amended) A frost resistant heating[/] or cooling fluid containing alkali salts of acetic acid [and/]or formic acid, wherein the fluid further contains a corrosion inhibitor consisting of a mixture selected from the group of C₅-C₁₆ monocarboxylic acid; alkali-salt, ammonium-salt, and amino-salts of C₅-C₁₆ monocarboxylic acid; C₅-C₁₆ dicarboxylic acid, alkali-salt, ammonium-salt and amino-salts of C₅-C₁₆ dicarboxylic acid; and a triazole.
2. (Twice Amended) A [cooling] fluid according to claim 1, wherein the fluid contains between 5 and 50 weight-% of alkali salts of an acid selected from the group consisting of acetic acid and formic acid [calculated] based on the weight of the fluid.
3. (Twice Amended) A [cooling] fluid according to claim 1, wherein the fluid contains between 0.4

and 10 weight-% of the corrosion inhibitor, [calculated] based on the total weight of the cooling fluid.

4. (Twice Amended) A [cooling] fluid according to claim 1, wherein the fluid contains between 0.02 and 3 weight-% of the corrosion inhibitor selected from the group consisting of monocarboxylic acid, alkali-salt, ammonium-salt and amino-salts of said acid, [calculated] based on the total weight of the cooling fluid.

5. (Twice Amended) A [cooling] fluid according to claim 4, wherein the fluid contains between 0.02 and 3 weight-% of the corrosion inhibitor selected from the group consisting of dicarboxylic acid; alkali-salt, ammonium-salt and amino-salts of said acid, [calculated] based on the total weight of the cooling fluid.



6. (Twice Amended) A [cooling] fluid according to claim 4, wherein the fluid contains between 0.02 and 2 weight-% of triazole [calculated] based on the total weight of the cooling fluid.

7. (Twice Amended) A [cooling] fluid according to claim 1, wherein said monocarboxylic acid is an aliphatic C5-C16 monocarboxylic acid, selected from the group of octanoic acid, nonanoic acid, decanoic acid, undecanoic acid, [and] dodecanoic acid[;], 2-ethyl hexanoic acid and neodecanoic acid.

8. (Twice Amended) A [cooling] fluid according to claim 1, wherein said dicarboxylic acid is a C8-C12 aliphatic dicarboxylic acid selected from the group of suberic acid, azelaic acid, sebacic acid, undecanoic di-acid, dodecanoic di-acid and the di- acid of di-cyclopentadienylide.

9. (Twice Amended) A [cooling] fluid according to claim 1, wherein said dicarboxylic acid is a C8-C12 aromatic dicarboxylic acid.

10. (Twice Amended) A [cooling] fluid according to claim 1, wherein the triazole is selected from the group consisting of tolyltriazole and benzotriazole.

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11. (Amended) A [cooling] fluid according to claim 3 wherein the fluid contains between 0.5 and 2 weight-% of the corrosion inhibitor, [calculated] based on the total weight of the cooling fluid.
12. (Amended) A [cooling] fluid according to claim 9 wherein said C8-C12 aromatic dicarboxylic acid is terephthalic acid.